



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,214	07/08/2003	William W. Brown	10030275-1	9777
57299	7590	04/03/2007	EXAMINER	
AVAGO TECHNOLOGIES, LTD. P.O. BOX 1920 DENVER, CO 80201-1920			DSOUZA, JOSEPH FRANCIS A	
		ART UNIT	PAPER NUMBER	
		2611		

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

SK

Office Action Summary	Application No.	Applicant(s)
	10/616,214	BROWN, WILLIAM W.
Examiner	Art Unit	
Adolf DSouza	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 12 December 2006.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1 - 18 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 1 - 9, 13-18 is/are allowed.
 6) Claim(s) 10 - 12 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

Response to Arguments

1. Examiner has accepted Applicant's response to the objections of claims 1, 6, 10 and 13 and corrections to the specification.
2. Claims 10 – 12 were allowed in the previous Office Action. Examiner is withdrawing the allowance of claims 10 – 12 in view of new grounds of rejection: Nebuloni et al (US 5,363,062).

Drawings

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the label "Fig. 1" does not appear on the diagram. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10 – 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nebuloni et al. (US 5,363,062) in view of Gorecki et al. (US 20030108092).

Regarding claim 10, Nebuloni discloses a first comparator circuit that establishes a first threshold (Fig. 3, element 20; column 2, line 63 – column 3, line 13; column 9, line 1 – 10);

a second comparator circuit that establishes a second threshold (Fig. 3, element 22; column 2, line 63 – column 3, line 13; column 9, line 22 – 33; wherein the second comparator is the third comparing means 22);

and a third comparator circuit that establishes a third threshold (Fig. 3, element 21; column 2, line 63 – column 3, line 13; column 9, line 11 – 21; wherein the third comparator is the second comparing means 21) ;

wherein the second threshold is greater than the first threshold and less than the third threshold (column 9, lines 22 - 33);

wherein the first and third comparator circuits each includes a load resistor having a center tap (Fig. 3, element 28, 29);

and wherein the load resistor center tap of the first comparator circuit is coupled to the load-resistor center tap of the third comparator circuit (Fig. 3, element 28, 29; wherein the load resistor center taps of the 1st and 3rd comparators are the center of resistors 28 and 29).

Nebuloni does not disclose a data slicer.

In the same field of endeavor, however, Gorecki discloses a data slicer (page 8, paragraph 70).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the data slicer, as taught by Gorecki, in the system of Nebuloni because this would allow a slicer operation to be implemented using comparators and thresholds as is well known in the art.

Regarding claim 11, Nebuloni does not disclose the thresholds are equally spaced.

In the same field of endeavor, however, Gorecki discloses the first and third thresholds are equally spaced from the second threshold (page 8, paragraph 70; wherein the first, second and third thresholds are the values $-2, 0, +2$ respectively resulting in a spacing of 2 from the center threshold).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the data slicer, as taught by Gorecki, in the system of Nebuloni because this would allow a slicer operation to be implemented using comparators and thresholds as is well known in the art.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nebuloni et al. (US 5,363,062) in view of Gorecki et al. (US 20030108092) and further in view of Reymond (US 5,517, 532).

Regarding claim 5, the combined invention of Nebuloni and Gorecki does not disclose that the comparator circuits are in CMOS.

In the same field of endeavor, however, Reymond discloses the comparator circuits are formed from complimentary metal oxide semiconductor devices (column 11, lines 2 - 5).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Reymond, in the system of Gorecki because this would allow the benefits of CMOS, namely low power consumption and high level of integration, to be utilized.

Allowable Subject Matter

7. Claims 1 – 9, 13 – 18 are allowed.

Other Prior Art Cited

8. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to PAM-4 signals and slicers:

Agazzi et al. (US 20020080898) discloses methods and systems for DSP-based receivers that utilize PAM-4 signals and slicers.

Trans et al. (US 20030016770) discloses a Channel equalization system and method that uses M-PAM.

Gorecki et al. (US 20030035497) discloses a System and method for providing slicer level adaptation.

Stonick et al. (US 20030108134) discloses a Method and apparatus for encoding and decoding digital communications data that uses PAM-n signals.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adolf DSouza whose telephone number is 571-272-1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Adolf DSouza
Examiner
Art Unit 2611

AD



DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER